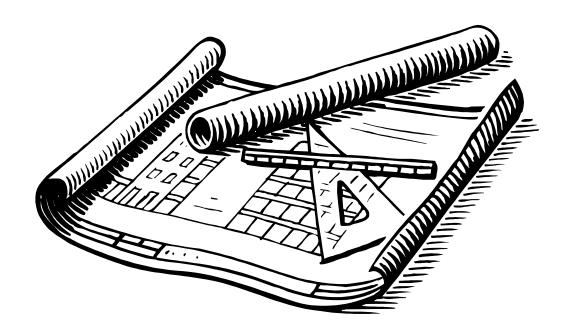


# Natural Resources Manual



This manual is intended to be a companion document to the Adams County Stormwater Runoff Ordinance and, as such, to provide all necessary guidance for compliance with said ordinance.

Completing the Inventory Worksheet is required and will provide the applicant of a stormwater runoff permit a checklist of resource concerns that might be encountered in the course of the land disturbing activity.

A site visit between the landowner(s) or their agent and LWCD personnel is highly encouraged to promote efficiency and eliminate duplication of effort. This site visit should be conducted as early as possible in the process as it will streamline requirements and/or exemptions.

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#### **INVENTORY WORKSHEET**

Adams County Land and Water Conservation Department 402 Main Street, P.O. Box 287

Friendship, WI 53934

Phone: 608-339-4268 FAX: 608-339-4504

LWCD Permit ID#

#### **INVENTORY ITEMS:**

- □ Maps: Location, Parcel, Existing Topography, Proposed Land Divisions, Soils, Floodplain, Critical Area Habitat, Natural Area and Environmental Corridors.
- □ Purpose of Activity.

(Examples: Subdivision, Condominium, 4000 sq.ft. parking lot)

- □ Location of Wetlands delineated on orthophoto map. (Delineation and approved by Army Corp of Engineers (715)345-7911)
- □ Location of all Surface Waters on orthophoto map, including OHWM and Shoreland Zoning Areas. (*Includes lakes, streams, ponds, rivers, ditches, intermittent flows, springs etc.*)
- □ Location of all Man-made Features Onsite on orthophoto map. (*Includes buildings, roads, parking lots, etc.*)
- □ Narrative describing existing vegetation within proposed land development area. (Classify percent ground cover, species, density, invasive species present, season of inventory)
- □ A narrative describing existing Cultural Resources or absence thereof within proposed land disturbance area. (*Information may be obtained by calling (608) 264-6500*).
- □ A narrative describing existing Historical Resources or absence thereof within proposed land disturbance area. (*Information may be obtained by visiting www.wisconsinhistory.org/hp/register*)
- □ A map locating (if available) and a narrative describing existing Threatened/Endangered/Special Interest Species and Sites or absence thereof within proposed land disturbance area. (*Information may be obtained by visiting www.dnr.state.wi.us/org/land/er/nhi*)
- □ A narrative describing the elevation of groundwater within proposed land disturbance area. (*Information may be obtained from Well Reports, Soil Logs, or Maps Available at Adams LWCD Office*)
- Copy of all Deeds, Covenants, other Recorded Documents describing the location of Easements, Utilities, and other covenants.
- ☐ If applicable, a narrative describing potential impacts to the area due to wastewater treatment system(s). (The potential impacts must be determined by an environmental consultant meeting NR712 certifications)
- ☐ If applicable, a narrative and pictures describing current Stormwater/Erosion Control Concerns.
- ☐ If applicable a Zoning Determination Letter. (Letter stating Township Support)

NOTE: ALL DOCUMENTS MUST BE SOURCED (DATE, AUTHOR, VERSION ETC..)
NOTE: ALL AERIAL PHOTOS MAY BE OBTAINED IN ADAMS REGISTER OF DEEDS

#### **STORMWATER PERMIT**

Adams County Land and Water Conservation Department 402 Main Street, P.O. Box 287

Friendship, WI 53934

Phone: 608-339-4268 FAX: 608-339-4504

### **LWCD Permit ID #**

Office Use Only

- □ Exempt
- □ Exempt (Tech)
- □ Stormwater

# SECTION I-TYPE OF ACTIVITY

- □ 4000 Sq.Ft. Impervious Surface Addition/Creation
- □ Multi-Dwelling Unit
- Subdivision
- Commercial
- □ Industrial

<ul><li>Other</li></ul>				
SECTION II-	-CONTACT	INFORMATION		
Landowner:	Name			
	_			
	Phone	FAX	Email_	
	_			
Consultant:	Name			
0 0110 011001101	_			
	Phone	FAX	Email	
	_			
Inspector:	Name			
P	_			
	Phone	FAX	Email_	
	_			
SECTION III	LSITE INFO	RMATION		
SECTION III	BILLING			
Local Address	10			
Section	Town	Range1/4	1/4 1/4	
Govt Lot	10wii	Subdivision_	_1/4 1/4	
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Aujoining 1	Toperty Own	icis ivanic/Address		
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Applicant Sig	nature		Date	
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Date Permit I			CUSH & _	

# **Adams County Stormwater Control Plan Standard**

## 1. Stormwater Control Plan Requirements

All requirements are based on project scope and applicability.

- **A. Narrative.** A narrative summary of the storm water management plan, briefly explaining any unique information that led to the selection of BMPs, how the proposed plan meets the guiding principles under par. (C) below, and the specific storm water planning requirements under par. (D) below.
- **B.** Cover Sheet. A cover sheet, stamped and signed by a professional engineer registered in the State of Wisconsin may be required, indicating that all plans and supporting documentation have been reviewed and approved by a Qualified Professional and certifying that they have read the requirements of this ordinance and that, to the best of their knowledge, the submitted plans comply with the requirements of the Adams County Stormwater Runoff Ordinance. The cover page should include, but not be limited to the following items;
  - **1. Designer.** Drafting date and contact information for the project engineer/technician/planner. The contact information shall be an individual not a firm or company;
  - **2. Location map.** Map showing the site location within a public land survey section or subdivision as specified by Adams County Land Information Office. Map shall include 2 major roadways for reference.
  - 3. Revisions. Documentation of all revisions including date, person, and type of change
  - **4. Utilities release.** Written authorization verifying all utilities have been located and are clearly marked to the minimum of the project boundaries. This will include an authorization number from the authorized utility or subcontractor.
- **C. \_Site Plan Map(s)** Prepared in accordance with minimum LWCD standards and of sufficient clarity for those responsible for site grading, including, but limited to:
  - **1. Plan Map Details.** Development title, graphic scale, north arrow; sheet numbers and revision dates on every page applicable.
  - **2. Property location.** Description by public land survey system (1/4 section, section, township, range, county);
  - **3. Survey Information.** Ownership boundaries, bearings, lengths and other survey references that will accurately identify the sites location, in accordance with Sec. 236 Wisconsin Statutes and county mapping standards for all land divisions;

- **4. Site Identification.** Lot numbers and dimensions, including outlots for all land divisions:
- **5. Surveyor's Seal**. Surveyor's certificate, signed, dated and sealed for all land divisions and CSM;
- **6. Discharge Location.** Location of existing and proposed storm water discharge points;
- **7. Conveyance System.** Type, size, location, profiles and cross-sections of all pipes, open channels, grade stabilization structures and other proposed storm water conveyance systems, with unique references to support/design documentation
- **8. Drainage Easements.** Location and dimensions of proposed drainage easements;
- **9. Access Easements.** Location, dimensions and surfacing material or soils data of proposed access lanes and delineation of easements needed to allow future maintenance and inspection of all storm water BMPs. The minimum width of any access easement shall be 15 feet as specified in the Maintenance Standard below unless otherwise designated by LWCD;
- **10. Easements**. Location and descriptive notes for any proposed easements, right-of-ways, vision corners or other known site restrictions. Road right-of ways and building setbacks shall be in compliance with all applicable administrative codes, adopted plans and ordinances;
- **11. Surface Information.** Delineation and labeling of all proposed impervious and pervious areas and accompanying areas;
- **12. Structures.** Location and descriptive notes for existing and proposed structures within 50 feet of the property boundaries and their proposed use, including, but not limited to buildings and foundations, roads, parking areas, fence lines, access lanes, culverts (include size and type), above ground utilities and retaining walls;
- **13. Waste Facilities.** Location and description of all waste storage facilities including but not limited to, dumps, landfills, manure or other waste storage facilities;
- **14. Setbacks.** Boundaries and descriptive notes for all applicable setbacks;
- **15. Public Dedication Area.** Location and descriptive notes proposed public dedications of parcels or right-of-ways;
- **16. New Well Information.** Location and documentation of new well delineation of any applicable regulatory setbacks, in accordance with Ch. NR 811 and 812 Wis. Admin. Code;
- **17. Documentation** Notes describing source documents, date and measure of accuracy for all applicable mapping features noted above;

- **18. Other.** Other site information that the LWCD determines is necessary to administer this ordinance.
- **D. Detailed Designs of BMPs.** At a minimum, cross sections and profiles for each BMP showing all critical design features, side slopes, structures, soil profiles and applicable elevations, including seasonal high water table and separations from karst features and bedrock;
- **E.** Materials Specifications Detailed material specifications for each BMP design.
- **F. Construction Notes.** Detailed construction notes explaining all necessary procedures to be followed to properly implement the stormwater control plan, including planting and landscaping specifications, timing and sequencing of construction and any temporary measures needed to protect BMPs during the construction phase;
- **G. Inspection Plan.** A detailed construction inspection plan, outlining the critical elements in the plan that need to be surveyed or inspected by a representative of the project engineer/planner, the LWCD or the town, and the timing and notification requirements involved.
- **H. Erosion Control Plan.** Erosion control practices associated with the land development activity including, but not limited to;
  - **1. Site Plan Map.** A plan map delineating land area to be disturbed and location of planned best management practices.
  - **2. Narrative.** A narrative describing the land disturbance activity, the best management practices to be installed, an installation schedule, procedure to certify practices installed, and a description of final site stabilization including areas within the property boundary but outside of the land disturbance area.
  - **3 Support Documents.** Documentation of any other calculations used to demonstrate compliance with the best management practices selected.
- I. Stormwater Control Plan Support Documents. Documentation of any other calculations used to demonstrate compliance with the performance standards in this section
  - 1. Hydrology. Accompanying runoff curve numbers within the site and draining into the site from adjacent properties, with unique references to hydrology data summaries and a description of the ultimate receiving water body(s) for off-site discharges. Predevelopment and post-development hydrology for 2 and 10 year storm events and pollutant loading (if applicable) data for each watershed, such as peak flows and runoff volumes, as needed to meet the requirements of this ordinance. All major assumptions used in developing input parameters shall be clearly stated and cross-referenced to the maps under par. C. above. Acceptable post development modeling must be TR-55 comparable and show no more than a 10% net increase in stormwater runoff.

Impervious surface maps and calculations of runoff volumes and effective infiltration areas, in accordance with par. C (11). above.

- **2. Hydraulic and Hydrologic Data.** Summaries for all existing and proposed pipes, open channels, grade stabilization structures and other storm water conveyance systems, and the necessary documentation to demonstrate compliance with the site drainage requirements.
- 3. Best Management Practice Design Data. BMP design data for each proposed BMP.
- **4. Soil Interpretations.** Soil evaluation reports, if required by LWCD personnel, following the standards with matching references to map features showing their location and elevations;
- **5.** Costs. Cost estimates for the installation of proposed storm water BMPs, which shall serve as a basis for the financial assurance, if applicable.
- **6. Impacted Owner Authorization**. For sites where changes are proposed in storm water flow paths, or where proposed storm water discharges may otherwise have a significant negative impact on downstream property owner(s), the LWCD may require the applicant to submit written authorization or complete other legal arrangements with the affected property owner(s); and
- **J. Other**. Items deemed necessary by the LWCD to ensure compliance with the requirements with Adams County Stormwater Runoff Ordinance No. 28-2007
- 2. Stormwater Runoff Control Plan Implementation. All best management practices shall be installed and maintained in accordance with approved plans and construction schedules. A copy of the approved plans shall be kept at the construction site at all times during normal business hours.
- **3. Stormwater Runoff Control Plan Modifications**. The LWCD shall be notified of any modifications proposed to be made to the approved plans. The LWCD shall require proposed changes to be submitted for review prior to incorporation into the approved plans or implementation. Any modifications made during plan implementation without prior approval by the LWCD are subject to enforcement action.
- **1. Inspection Log.** The permit holder shall provide a qualified professional to conduct inspections and maintain an inspection log for the site. All best management practices shall be inspected within 24 hours after each rain event of 0.5 inch or more or at least once each week. The inspection log shall include the name of the inspector, the date and time of inspection, a description of the present phase of construction, the findings of the inspection, including an assessment of the condition of erosion and sediment control measures and the installation of storm water management BMPs, and any action needed or taken to comply with this ordinance. The inspection log shall also include a record of BMP maintenance and repairs conducted under subs. 8 and 9 below. The permit holder shall maintain a copy of the inspection log at the construction site or via the Internet, and shall notify the LWCD of the method of availability upon permit issuance. If the inspection log is maintained on site, the

LWCD may view or obtain a copy at any time during normal business hours until permit termination under. If the inspection log is made available via the Internet, the permit holder shall notify the LWCD of the appropriate Internet address and any applicable access codes, and shall maintain the availability of the log until permit termination.

# 5. Application for Technical Exemption of Stormwater Runoff Control Plan.

An exemption may be granted by the LWCD upon the applicant submitting the following items to the LWCD, which shall constitute a completed application:

#### A. For off-site BMP(s)

- **1. Documentation.** Documentation that the necessary BMP(s) have been properly installed, including construction certification and design summaries in accordance with Sec. 8.2 (A) of the Adams County Stormwater Runoff Ordinance;
- **2. Maintenance Agreement.** A copy of the recorded maintenance agreement in accordance with Sec. 13 of Adams County Stormwater Runoff Ordinance, and any other easements or legal arrangement that may be involved to ensure the long-term maintenance of the off-site BMP(s).
- **3. Associated Fees.** Documentation of payment of any applicable fees that may be required by a unit of government charged with implementing a regional storm water management plan. Note: Fees may be through a storm water utility district or other unit of government and would usually be based on an equitable distribution of costs for land acquisition, engineering design, construction, certification and maintenance of storm water BMPs implemented through the regional storm water management plan
- **4. Other.** Other materials that the LWCD determines to be necessary to make a determination under this subsection or to comply with this ordinance.

# **B.** Application for Exemption Review and Notification Procedures.

The LWCD shall review all exemption application materials submitted to determine compliance with this section and notify the applicant of a decision within 30 working days of the application submittal date, in accordance with the procedures under Sec. 9.1 of the Adams County Stormwater Runoff Ordinance. The LWCD shall approve all exemptions in accordance with the procedures in Sec. 9.0 of the Ordinance. In consideration of all exemption requests, the LWCD shall ensure that the applicant meets the requirements of this section to the maximum extent practicable.

# C. Exemption Fee.

For those sites that are exempted under this subsection, the applicant shall pay a fee to the LWCD

- **8.** Repairs Not Associated with Stormwater Runoff Control Plan. The permit holder shall be responsible for any damage to adjoining properties, municipal facilities or drainage ways caused by erosion, siltation, runoff, or equipment tracking. The LWCD may order immediate repairs or clean-up within road right-of-ways or other public lands if the LWCD determines that such damage is caused by activities regulated by a permit under this ordinance. With the approval of the landowner, the LWCD may also order repairs or clean-up on other affected property.
- **Sec.** 11 of the Adams County Stormwater Runoff Ordinance, may enter any property to perform any work or operations necessary to bring erosion control or storm water management practices into conformance with the approved plans and consents to charging such costs against the financial assurance or to a special assessment or charge against the property as authorized under Subchapter. VII of Ch. 66, Wisconsin Statutes.
- **10. Other Requirements.** The LWCD may include other permit requirements that the LWCD determines are necessary to ensure compliance with this ordinance.

#### **Adams County Maintenance Standard**

The Adams County Maintenance Standard is designed to protect the landowner, the County, and the resources for generations to come. It is comprised of four sections; a recorded document, a plan of maintenance, an approval of said plan by Adams County LWCD, and an assignment of maintenance responsibilities during construction. These elements are spelled out below.

#### 1. Recording Document.

**A.** Upon certification of compliance with Sec. 9.2, permit holder will be required to record the maintenance documents (see Appendix 3) which shall be recorded at the Adams County Register of Deeds referencing any plat, certified survey or other ownership transfer device pertaining to land which contains the subject BMP or is subject to maintenance responsibility in the approved agreement. For new land divisions, the recording of the maintenance documents shall occur simultaneously with the recording of the land division. However, no BMP maintenance documents shall be recorded prior to LWCD approval. The permit holder shall provide a copy of the recorded agreement, including evidence of the actual recording(s), to the LWCD as a condition of release of the financial assurance

#### 2. Maintenance Plan Requirements

- **A.** Ownership. Identification of the owner(s) of the land parcel(s) where the storm water and erosion control BMP(s) is located. For subdivisions, all storm water and erosion control BMPs shall be located on outlots. For all privately owned outlots, ownership shall be by proportional undividable interest for all properties that are within the control of the applicant and drain to the BMP. However, the applicant may combine ownership of more than one BMP within the site:
- **B.** Location. A legal description and survey map of the BMP location(s), showing associated drainage or access easements required to maintain the BMP;
- **C. Maintenance activities.** A description of all long term maintenance activities that will likely be required for each BMP included in the agreement, and an estimated time interval between each activity;
- **D.** Access. Authorization for vehicle access, including a minimum 15-foot wide access easement dedicated to the local municipality and connecting to a public road right-of-way, to allow for future BMP maintenance work. The access easement shall be of adequate soil conditions or surfacing to withstand loads produced by standard construction equipment, and shall not include any area where channelized flow of runoff occurs or where storm water may pond to a depth greater than six (6) inches during a 100-year, 24-hour design storm.
- **E.** Maintenance responsibility. Identification of the person(s), organization, municipality or other entity responsible for long-term maintenance of the storm water BMP. This assignment may not be to an association or committee. It shall be assigned to a named individual or office. The assignment of maintenance responsibilities for a privately owned storm water and

erosion control BMP shall, at a minimum, include all properties that are within the control of the applicant and drain to the BMP. However, the applicant may combine the maintenance responsibilities of more than one BMP within the site;

- **F. Inspections.** Authorization for access to the property by representatives of the local municipality or their designee and Adams County to conduct inspections of the BMP, monitor its performance and maintenance, and notify the designated entity when maintenance or repair activities are necessary. A statement shall also be included that says, upon written notification by the local municipality or their designee, that the entity under par. E above shall, at their own cost and within a reasonable time period, have a BMP inspection conducted by a qualified professional, file a report and complete any maintenance or repair work recommended in the report;
- **G. Municipal maintenance.** Authorization for the local municipality or their designee to carry out any maintenance activities and associated inspections if the entity identified under par. E above does not perform the required activity within the specified time period in the notification or if the local municipality does not accept the work conducted by the designated entity;
- **H. Special assessment.** A statement that the applicable local unit of government may exercise their statutory authority to levy and collect a special assessment or charge pursuant to Subchapter. VII of Ch. 66 Wisconsin Statutes, or Sec. 60.0627, Wisconsin Statutes for towns, for any services carried out relating to par. F or G above;
- **I. Binding agreement.** A statement confirming that the entire agreement shall remain binding on all subsequent owners of the property upon which the storm water and erosion control BMP is located and that the restrictions shall run with the land and on any other property which is subject to maintenance responsibility in the agreement;
- **J.** Agreement modifications. Sole authorization for the unit of government named under par. G above to modify the provisions of the agreement upon 30-day notice to the current owner(s) and other parties responsible for maintenance of the storm water and erosion control BMP. Any changes made to the agreement shall maintain the minimum items listed in this subsection and ensure the long term maintenance of the BMP;
- **K.** Other. Other information as determined to be necessary by the LWCD to ensure compliance with this ordinance.

#### 3. Agreement Review and Approval.

**A.** The LWCD shall review and approve the form and content of all maintenance agreements proposed under this ordinance and ensure compliance with all provisions of this section. If the agreement does not comply, the LWCD shall notify the applicant what changes are needed in order to comply, in accordance with the plan review procedures in Sec. 9.3 and 9.4 of Adams County Stormwater Runoff Ordinance No. 28-2007

#### 4. Maintenance Responsibilities Prior to a Maintenance Agreement.

A. The permit holder and other responsible party shall be responsible for the maintenance of all storm water BMPs prior to permit termination.

#### **APPENDIX 3**

#### RESTRICTIONS FOR MAINTENANCE OF STORMWATER MANAGEMENT MEASURES

THIS FORM MUST BE FILLED OUT USING BLACK INK, AND MUST BE LEGIBLE- NO FAXED COPIES SHOULD BE USED

#### **RECITALS:**

A.	
is the owner of property in the Town of, County of Adams, State of Wisconsin, more particularly described on Exhibit A attached hereto ("Property"). Attach a separate sheet	This space is reserved for recording data
including the complete and accurate legal description of the property.	Return to: Adams County LWCD
B. Adams County requires Owner to record this Declaration regarding maintenance of stormwater management measures to be	P.O. Box 287 Friendship, WI 53934
located on the Property. Owner agrees to maintain the stormwater management measures and to grant to Adams County the rights set forth below.	Parcel Number(s):

NOW, THEREFORE, in consideration of the declarations herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the owner agrees as follows:

- 1. <u>Maintenance</u>. Owner and its successors and assigns shall be responsible to repair and maintain the stormwater management measures located on the Property in good condition and in working order and such that the measures comply with approved plans on file with Adams County. Said maintenance shall be at the Owner's sole cost and expense. Owner will conduct such maintenance or repair work in accordance with all applicable laws, codes, regulations, and similar requirements. *Include specific maintenance tasks and schedule on Exhibit B, and use additional sheets if necessary.*
- 2. <u>Easement to County</u>. If Owner fails to maintain the stormwater management measures as required in Section 1, then Adams County shall have the right, after providing Owner with written notice of the maintenance issue ("Maintenance Notice") and thirty (30) days to comply with the County's maintenance request, to enter the Property in order to conduct the maintenance specified in the Maintenance Notice. County will conduct such maintenance work in accordance with all applicable laws, codes, regulations, and similar requirements and will not unreasonably interfere with Owner's use of the Property. All costs and expenses incurred by the County in conducting such maintenance may be charged to the owner of the Property by placing the amount on the tax roll for the Property as a special assessment in accordance with Section 66.0703, Wis. Stats. and applicable portions of the Adams County Ordinances.

3. <u>Term/Termination</u>. The term of this Agreement shall commence on the date that this original Agreement is recorded with the Register of Deeds Office for Adams County, Wisconsin, and except as otherwise herein specifically provided, shall continue in perpetuity. Notwithstanding the foregoing, this Agreement may be terminated by recording with the Register of Deeds Office for Adams County, Wisconsin, a written instrument of termination signed by Adams County and all of the then-owners of the Property.

#### 4. Miscellaneous.

(a) <u>Notices</u>. Any notice, request or demand required or permitted under this Agreement shall be in writing and shall be deemed given when personally served or three (3) days after the same has been deposited with the United States Post Office, registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

If to Owner:			
(Print Name	& Mailing Address	·)	
_			 
_			
_			
If to County:			
Adams Coun	ty LWCD		
P.O. Box 287	7		
Friendship, V	VI 53934		

Any party may change its address for the receipt of notice by written notice to the other.

- (b) <u>Governing Law</u>. This Agreement shall be governed and construed in accordance with the laws of the State of Wisconsin.
- (c) <u>Amendments or Further Agreements to be in Writing</u>. This Agreement may not be modified in whole or in part unless such agreement is in writing and signed by all parties bound hereby.
- (d) <u>Covenants Running with the Land</u>. All of the easements, restrictions, covenants and agreements set forth in this Agreement are intended to be and shall be construed as covenants running with the land, binding upon, inuring to the benefit of, and enforceable by the parties hereto and their respective successors and assigns.
- (e) <u>Partial Invalidity</u>. If any provisions, or portions thereof, of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, or the application of such provision, or portion thereof, to any other persons or circumstances shall not be affected thereby and each provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

	State of WI, County of
bscribed and sworn gnature- Adams County Land and Water Conservation Staff before me on _	•
Print or type name	
_	NOTARY PUBLIC Print or type name:
My Commission Expires	
Subscribed and sworn before me on	
Subscribed and sworn before me on  Owner Signature (Only sign before a Notary Pub	plic)
	olic)
Owner Signature (Only sign before a Notary Pub the above named person(s).	State of WI, County of;

# HYDROLOGY

# **DESIGN STORM EVENTS for ADAMS COUNTY**

FREQUENCY (year)	<b>DURATION</b> (hour)	RAINFALL (inches)
2	24	2.8
5	24	3.6
10	24	4.14
25	24	4.7
50	24	5.2
100	24	5.9

Relationship Between Saturated Hydraulic Conductivity, Permeability, and Hydrologic Group

Saturated Hydraulic Conductivity Classes  —Permeab ility (in/hr) Permeab ility Classes Hydrologic Group 0 to 19 inches	Aydrologic Group 20 to 39 inches
high high rapid rapid	
High Hod	≪‡
moderate	
moderately high nod.	
21 th	д
noderately low one — — — — — — — — — — — — — — — — — — —	
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very low of extre	

References:

Soil Survey Division Staff, (1993), Soil Survey Manual, United States Department of Agriculture, Washington, D. C.

Uhland, R.E. and O'Neal, A.M., (1951), Soil Permeability Determinations for Use In Soil and Water Conservation, United States Department of Agriculture, Washington, D.C.